being associated with a unique chemical or physical characteristic that identifies the biomolecules attached to said bead type, wherein beads are arranged in a planar array and biomolecules attached to said beads are exposed to a continuous liquid phase, said biomolecules capable of forming complexes with corresponding analyte compounds, when said analyte compounds are present in said liquid phase.

44. (New) The array of claim 43, wherein the biomolecules comprise peptides or proteins.

45. (New) The array of claim 43, wherein the biomolecules comprise oligonucleotides or nucleic acids.

46. (New) The array of claim 43, wherein the biomolecules are selected from the group consisting of ligands, receptors, antigens and antibodies.

47. (New) The array of claim 43, wherein the beads of each type are encoded with a chemical label that uniquely identifies the biomolecules attached to said bead type.

48. (New) The array of claim 43, wherein the beads are on an electrode.

49. (New) The array of claim 43, wherein the beads are on a silicon chip.

50. (New) An array of biomolecules comprising a plurality of subarrays that are spatially separated from each other, wherein each of the subarrays is an array of claim 47 and wherein the location of the subarrays, in conjunction with the unique chemical label associated with each type of beads located in that subarray, uniquely identifies the biomolecules placed therein.

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~~51~~. (New) The array of claim ~~43~~, further comprising one or more analyte compounds, wherein said analyte compounds form analyte-biomolecule complexes with the biomolecules attached to said beads.

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~~52~~. (New) The array of claim ~~51~~, wherein the formation of the analyte-biomolecule complexes results in an optical signature being associated with said complexes, and the detection of the complexes is accomplished by detecting the presence of the optical signature.

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~~53~~. (New) The array of claim ~~52~~, wherein the optical signature comprises a fluorescent signal.

54. (New) The array of claim 52, wherein said optical signature is detected by means of optical microscopy in conjunction with a recording device.

55. (New) The array of claim 54, wherein said recording device comprises a charge-coupled device (CCD).

56. (New) The array of claim 43, wherein the analyte compounds are selected from the group consisting of peptides, proteins, oligonucleotides, nucleic acids, ligands, receptors, antibodies and antigens.

57. (New) A method of detecting the formation of an analyte-biomolecule complex comprising the following steps:

providing an array according to claim 43,

contacting the biomolecules with a sample that may contain one or more analyte compounds such that, if the analytes are present in the sample, said analytes bind to corresponding biomolecules to form analyte-biomolecule complexes;

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detecting the formation of the analyte-biomolecule complexes and

identifying the biomolecules of the analyte-biomolecule complexes by means of the unique chemical or physical characteristics of the beads associated with said complexes.

58. (New) The method of claim 57, wherein the beads of each type are encoded with a chemical label that uniquely identifies the biomolecules attached to said bead type.

59. (New) The method of claim 57, wherein the formation of the target-biomolecule complexes result in an optical signature being associated with said complexes, and the detection of the complexes is accomplished by detecting the presence of the optical signature.

60. (New) The method of claim 59, wherein the optical signature comprises a flourescent signal.

61. (New) The method of claim 59, wherein the optical signature is detectable by means of optical microscopy in conjunction with a recording device.

62. (New) The method of claim 61, wherein the recording device comprises a charge coupled device (CCD).

63. (New) The method of claim 57, wherein the biomolecules comprise peptides or proteins.

64. (New) The method of claim 57, wherein the biomolecules comprise oligonucleotides or nucleic acids.

65. (New) The method of claim 57, wherein the biomolecules are selected from the group consisting of ligands, receptors, antigens and antibodies.

66. (New) The method of claim 57, wherein the beads are on an electrode.

67. (New) The method of claim 57, wherein the beads are on a silicon chip.

68. (New) The method of claim 57, wherein the analyte compounds are selected from the group consisting of peptides, proteins, oligonucleotides, nucleic acids, ligands, receptors, antibodies and antigens.

69. (New) A method of detecting the formation of an analyte-biomolecule complex comprising the following steps:

providing an array of biomolecules comprising a plurality of subarrays that are spatially separated from each other, wherein each of the subarrays is an array of claim 47 and wherein the location of the subarrays, in conjunction with the unique chemical label associated with each type of beads located in that subarray, uniquely identifies the types of biomolecules placed therein;

contacting the biomolecules with a sample that may contain one or more analyte compounds such that, if the analytes are present in the sample, the analytes bind to corresponding biomolecules to form analyte-biomolecule complexes; and

identifying the biomolecules of the analyte-biomolecule complexes by means of the unique chemical label associated with the complex and by means of the location of the subarray in which said complex is located.

REMARKS

By this Preliminary Amendment, all claims pending in the application have been canceled without prejudice and new claims 43 to 69 have been added. The amendments have been made to present the claims in a better form. Support for the claims may be found, for example, on pages 26 to 30